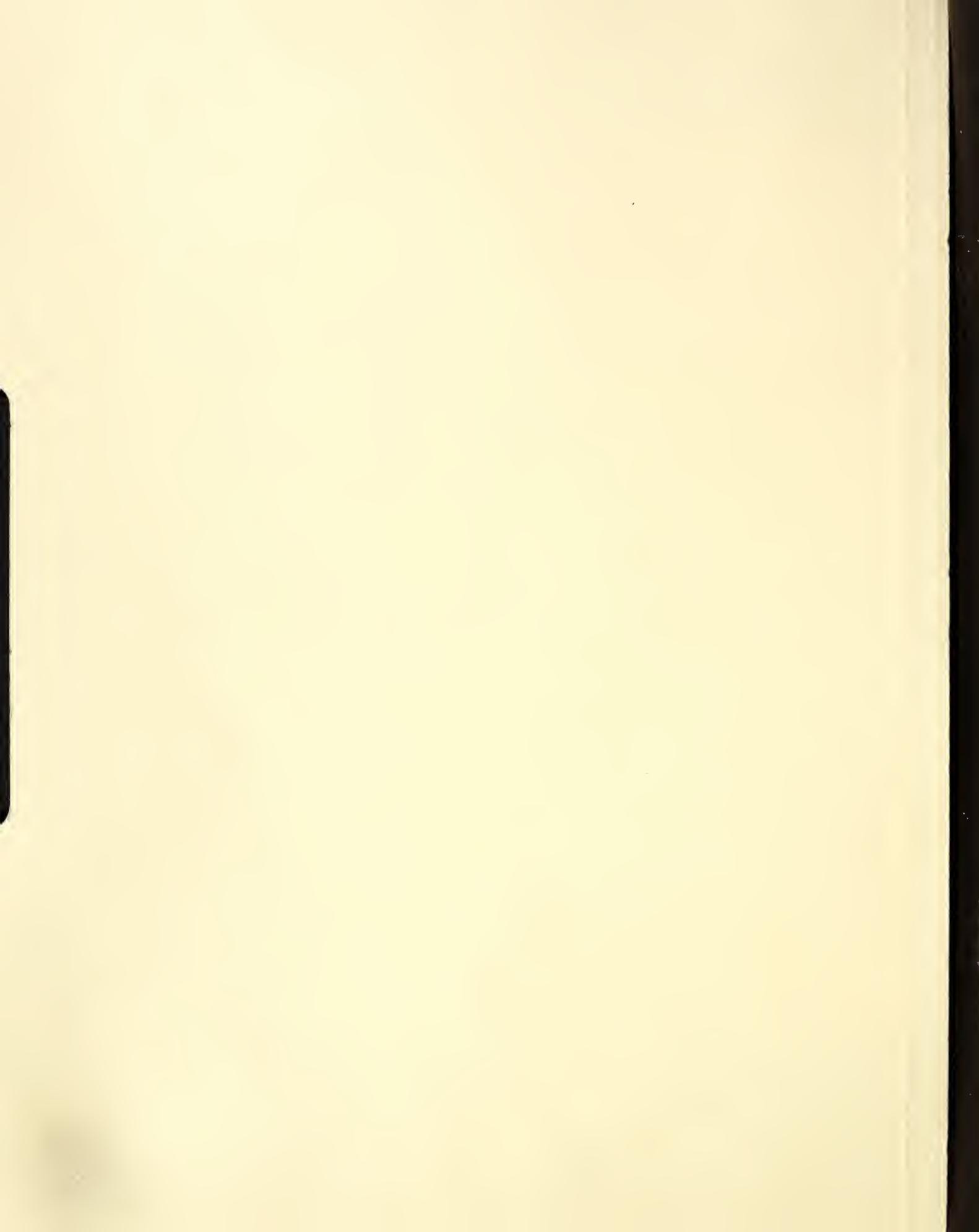


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IMPLICATIONS OF VERTICAL INTEGRATION FOR
FARM PRODUCTION PROCESSES

I. It appears that in the minds of farm people and in the minds of many other people the key question concerning vertical integration is who will manage farmers' farms in the future? Will farmers be their own bosses?

- (a) What do we generally mean by vertical integration? It is usually considered as occurring when the management of one firm (either farm or non-farm) obtains management control over some of the additional production steps or processes between the raw material stage and the sale of the consumer product.
- (b) This may be done by (1) acquiring ownership of the assets needed to perform the vertical steps or processes, or (2) through contractual arrangements which give the integrator management control over the vertical steps or processes.
- (c) This definition of vertical integration may be interpreted to mean that the integrating firm (if it is a non-farm firm) must take some of the production risks such as those of disease, weather, yield, quality, etc., which occur in getting farm products produced. (By assuming this farm production risk the integrator may reduce his risk in the other operations in which he was already engaged.)
- (d) It is obvious that farm production risks are taken when vertical integration occurs through acquiring ownership.
- (e) However, most of the current interest, publicity and concern about vertical integration stems from the increasing use of contractual arrangements.

This statement is essentially the same as the discussion given by Buel F. Lanpher, Jan. 27, 1959, at Farm and Home Week, University of Kentucky. Further elaboration has been made of some points and a few new points have been added to the original discussion.

- (f) Most of the people who have studied vertical integration come to the conclusion that many buying and selling contracts made by farmers involve little if any vertical integration. These contracts may tend to let the farmer transfer some of his price risk -- such as in a contract to sell hogs, or feeder cattle, or buy fertilizer next spring.
- (g) However, it seems that if vertical integration occurs only when the integrator has some management control then contractual arrangements result in vertical integration only when the integrator takes some of the production risks. And when the integrator does this he then insists on having some right or authority to tell the farmer how to produce.

II. (a) What is the basic reason why the management of one firm is interested in having something to say about how other production processes are carried out -- especially farm production?

- (b) The answer, with little exception, is that they see an opportunity to increase the future profits of their firm over what they are likely to be otherwise. But, what are the developments which have made managers want to examine this opportunity?
- (c) We might illustrate by using pork production as an example. Years ago all the processes of pork production -- making tools and equipment, raising feed, raising hogs, processing the pork, and selling to consumers were fully integrated under one management - the family farm.
- (d) The advance of technology has resulted in the specialization of production wherein there are independent firms performing these different processes. In some instances firms are specializing in splinters of old processes such as the farmer whose main enterprise is that of

producing breeding stock. This is a characteristic of any society which makes economic progress.

- (e) It was also necessary for each of these firms to become quite large in size in order to be specialized and to develop an efficient business organization.
- (f) With bigger and bigger specialized firms there is an increasing problem of coordinating or keeping in balance the production of these firms. This is especially true of the farm production processes since weather, disease, and the ever-changing production plans of farmers consistently result in a variable output of crops and livestock.
- (g) Also, farm products have not been consistent in quality and far too often of much poorer quality than what many non-farm firms know can be produced.

III. What ways have we used to coordinate farm production with the needs and desires of non-farm processes?

- (a) In the past we have mostly depended on central market prices as the means of coordinating the production of these specialized firms. However, as indicated above, there has been an increasing number of situations particularly on the farm side where the prevailing market and price mechanism is not coordinating farm and non-farm production as well as many people think it should.
- (b) For a number of years there has been an increasing trend for non-farm firms, such as fruit and vegetable processors, meat packers, and even fertilizer manufacturers to use a sales contract with farmers so they can somewhat better get the quantity and quality of farm production at the time they want it or need it. Farmers are also interested in such contracts because they are able to transfer price risk to someone else and thus make production plans with more price certainty.

(c) In recent years much interest has developed in the possibilities of coordinating farm production through vertical integration type of contracts which give management control (especially since these have come into such widespread use in broiler production). Consolidation under one management of several specialized processes or steps of production may enable managers to better control the quantity and quality of production.

IV. In order to make the predictions that are called for in the title of this talk (Implications of Vertical Integration for Farm Production Processes) it seems necessary to first make some predictions about the future trend of how farm production will be coordinated with non-farm production.

(a) First, it is expected that the historical trend towards specialization will continue and this appears as likely or more likely in those processes which are now being carried on the farm than processes performed by non-farm firms. In this connection I might mention that I recently noticed that in the 1919 Yearbook of Agriculture considerable attention was given to the home production of limestone. Over time, we gradually see independent firms develop to specialize in activities that farmers had been performing themselves. In some instances these independent firms may still be considered as farm firms but highly specialized such as the certified seed grower. With everyone expecting the continued development of new technology in agriculture, no one questions that there will be a further trend toward specialization. The question again is, who will manage these more specialized farms?

(b) I expect an increased if not accelerated use of sales contracts to coordinate farm production with non-farm processes. This type of contract is often being called specification buying. As farms and non-farm

firms become larger and more specialized both farm and non-farm managers become increasingly interested in the coordination of farm production. One of the biggest deterrents to farmers expanding output and becoming more specialized is the price risk they have to take. Thus the managers of non-farm firms will be able to obtain, to a large extent, the guarantees of quantity and quality of farm products they need through use of a sales contract. This also applies to firms selling farm supplies. Such operations may be considered the same as forward buying or selling similar to the hedging operations practiced by many firms for years on the commodity futures markets. It is this type of situation that I would call contract farming separating it from vertical integration.

In such a situation the non-farm firm offering contracts becomes a specialist in the taking of price risks through developing ways or being able and willing to carry price risk more cheaply than the individual farmer. In other words, this could be looked at as another type of service being made available to farmers rather than a step to telling farmers how to manage their business.

(c) Thus, I expect no great trend in the next decade or two towards vertical integration where the concept of vertical integration is that of the manager of a non-farm specialization telling a farm producer what and how to produce and also taking some of the associated risks of production. It is felt that the non-farm firm will be reluctant to make contracts with farmers which result in the non-farm firm's profit depending on the cost of production, the quantity produced, the time of production, and the quality of product produced, as well as price of the farm product.

There will undoubtedly be some increase in vertical integration of this type and it may occur to a great degree in some instances as it has in broiler production. In my opinion, the key factor as to whether this occurs lies in the development of new technology of production and business relationships which will enable the manager of the integrating firm to keep quite low the costs of managing and supervising farm production. I think that before an integrator will be willing to sign a contract wherein he agrees to take the production risk or even a significant part of the risk with 50 farmers to produce 2,000 hogs per year, he must find a way to keep management and supervision costs much lower than it now seems possible.

New technology, which would enable the production of a farm product to be set up in a series of standardized and routine steps from farm to farm, would greatly increase the possibilities of vertical integration. Development of such technology did take place in the broiler industry and this enabled the integrating firm to considerably reduce the costs of exercising management control over farm production. However, the development of such technology tends to vastly expand the volume of production that one man can handle. The independent manager can also produce a much larger volume per farm and it is difficult to visualize that the top level independent managers will not be willing to furnish the needed management of the larger-scale, more specialized production units more cheaply than what it will cost the integrating firm to obtain a comparable level of management. The answer as to who will assume management control in cases where production practices can be highly routinized and mechanized may rest to a large extent on who is willing to take the risk of employing the large amounts of capital required to produce in these large highly specialized production units. Managers of corporate firms (with the 52-percent corporate income tax) are not likely to be eager to tie up much capital in the high-risk business of farm production. This is especially likely to be true as long as

there seems to be plenty of individuals and non-corporate firms who do not pay corporate taxes and who are willing to put capital (and also labor) into agriculture for less financial return than they would receive from non-farm investments.

The tax considerations and experience with broilers indicate that non-corporate firms such as local feed dealers, local processors or farm co-ops are the most potential integrators of farm production. However, even where standardized production practices can be set up these non-corporate firms must hire competent managers and operate on a sufficiently large enough scale to permit them to spread out the cost of obtaining this management resource.

If integration does occur in some commodity it may tend to reverse itself over a period of time. The managers of a non-farm specialized process obviously will not want to continue to manage farm production if they can otherwise get the kind and amount of farm products they want more cheaply from large independent producers. In fact, I understand that in broilers there is a trend to write contracts which give more risk and thus more control to producers. On the other hand, reports indicate that some of the former vertical integration contractual set ups have emerged into extremely large independents wherein one firm completely owns all the facilities to carry on the several processes. 1/

1/ In fact, there appears to be in agri-business a few instances of vertical integration occurring through full ownership of adjoining processes which appear to have strong competitive positions. The potential success of the ownership type of integration seems to lie in situations where the amount needed of a product or service from an adjoining process can be produced quite efficiently by one operating plant or unit. In such instances the costs of a distribution or marketing system between the adjoining processes can largely be eliminated. The most common place in agri-business where this has happened is in the integration of wholesaling and retailing of food. Formerly one wholesale

The initial development of vertical integration type of contracts with farmers, or the threat of such a development, is likely to give independent producers incentive to adopt new technology, and become more specialized so as to be more competitive with the result that farm production will be better coordinated with non-farm processes. In the case of hogs, the well discussed vertical integration threat appears to be giving such an incentive to many Corn Belt hog producers.

V. What are the implications of these predictions for farm production? Many of them have already been stated to some extent:

(a) There will be a continued increase in size of enterprise per farm -- i.e., the number of hogs or layers or cows per farm. The only question pertains to the rate of increase. I will not try to predict what might be typical in 10 or 15 years from now, but when someone mentions a quite large number of units per farm these days people do

firm supplied a number of retail outlets but with the growth in size of retail outlets, efficient sized wholesale and retail units now appear to be approximately the same size. This seems to be similar to what is happening in the large independently owned broiler set ups where the feed distribution, egg hatching, and broiler processing is carried on at the same size as the size of the broiler production operation. One similar type of situation has been reported in egg production. Again the key as to whether this type of integration will live is whether the size of business which each process is carried on is the most efficient, if so, then the management of an adjoining process might be successfully combined under one management. In the case of hogs and cattle there would have to be a considerable further increase in the size of these enterprises that could be efficiently operated by one management under full ownership before the size is as large as what is presently considered to be efficient-sized units in processing and distribution of pork and beef.

not raise their eyebrows as much as a few years ago. I can remember a few years back when we were saying in most cases it would take at least 500 laying hens to make an efficient flock. However, during the National Outlook Conference last fall a person referred to one flock of 250,000 hens with the inference that we might expect more flocks of this magnitude. The farmers in Union County (Kentucky) are not nearly as dubious now at talk of raising 2,000 hogs per farm as they were 2 years ago when we talked of such possibilities down there in a farm management school.

- (b) The amount of capital per farm worker has been increasing and will continue to do so particularly on those farms that make the large increase in size of enterprise mentioned above. The amount of capital used including land per farm for all types in the United States now averages around \$30,000, but for a large portion of commercial farms total capital value is \$100,000 or higher. The amount of capital invested by farmers who have signed sales contracts or vertical integration contracts in the past tended to increase since in most instances they expanded their size of business. This is likely to continue to be the case and this will increase use of credit per farm both for operating capital and for real property.
- (c) The number of things or services that a farmer will be able to contract for, which he formerly did himself, will continue to increase. This trend is part of the trend towards specialization. There has probably been more development of contract services in crop production than in livestock. However, there have been some notable examples of new livestock services in recent years such as the local feed mixing plant, raising of dairy heifers, and the artificial insemination association.

(d) Management skill and the technical skill in the production of the products a producer is specializing in will become increasingly more important rather than less whether he operates with a sales contract, in a vertical integration set up, or independent of contractual arrangements. The management skill of producers who went into integrated broiler systems has had to constantly increase or else they were dropped out.

Considering the larger size of enterprise he will be managing and the more exact market requirements for his product the farm manager will probably face an increasing number of decisions and more complex decisions. Most of us will agree that the future farm manager will face a faster rate of change than he has in the past and that he will have to consider in his decisions more things which are external to his farm than in the past.

(e) There will probably be a decline in the cost of producing farm products as size of enterprise goes up and as the management level of farm operators increases (this assumes a constant national price level). The adoption of output increasing technology will tend to be speeded up with either sales contracts or vertical integration contracts as these contracts remove some of the farmer's price and production uncertainty. The experience with Government price supports indicates that farmers will tend to speed adoption of technology when part of the price risk is removed. With contractual arrangements some of the production risk, as well as price risk, may be reduced and also the farmer is urged to adopt new technology by the contractors.

The cost of labor per hour may go up some, which will offset to some extent the lower costs stemming from advancing technology. However, higher labor costs will further encourage adoption of labor-saving practices and equipment.

- (f) The trends in contractual arrangements and the implications previously projected will tend to cause larger total national output of farm commodities and lower prices to farmers. In particular, the trend to larger size of enterprise per farm will result in larger total output unless some effective supply control method is devised. Total net income on many farms may be maintained or increased by increasing volume per farm even though profit per unit (per hog, cow, chicken) goes down. The broiler industry has increased volume per farm slightly faster than the decline in net return per bird. Also, if cost per unit goes down as mentioned above, this will also cause farm prices to come down since the reduced cost will generally encourage increased output unless farm prices come down a corresponding amount.
- (g) There may be some step-up in the shifting of production between regions or to areas that are favored by new technology. Each piece of new technology tends to give a comparative advantage to some regions over others. Quite often new technology gives even further advantages to an area that already has a considerable degree of comparative advantage. With better and faster analysis of where new technology is best suited and its speedier adoption in big-sized enterprises, area shifts in production are likely to be accelerated (Government production controls could slow this down). With each little cost advantage becoming more important as size of enterprise grows, there is likely to be an intensification of specialization in regions that have any comparative advantages.

- (h) Total output in the future may vary less from year to year and cyclical swings in livestock production may diminish some with the anticipated increase in contractual arrangements. This is one of the big objectives of attempting to coordinate farm production through contractual arrangement. However, even contractual arrangements will probably not be able to offset in any large degree the effects of varying feed production which in turn tend to result in varying livestock production. Of course, Government storage programs may continue to have some effect in nullifying the variations in feed grain production.
- (i) There may be an increasing number of instances where farm producers of some commodities and in some localities may face increasing degrees of limited monopoly power in their markets. This is most likely to happen where there is a small number of firms in some non-farm specialized process. Where there is only one or a very few buyers of farm products in some communities they may be able to increase control over producers beyond that which would exist in a more competitive situation. However, only limited power could be achieved as competitors or competing products would develop if any large power were exercised so as to result in large profits. On the other hand, this limited monopoly power may exist sufficiently and long enough so as to bring severe financial results on producers who have invested in fixed resources (buildings, equipment, skills, etc.).
- (j) The fear of farmers being controlled by large non-farm firms is bringing increased interest in development of farmer co-ops and even Government programs to help give farmers bargaining power. Farmer co-ops have had difficulty in the past in carrying out the function of providing adequate bargaining power with non-farm firms since

they have had little effective control over supply. It would appear that they are likely to continue to have difficulty in this regard except possibly where almost all of a product is produced in a local area. There is also interest in co-ops to function as the integrator or contractor so as to return some of the benefits of coordination back to the farmer. There may be some possibilities for such a co-op with situations of limited membership and where the members are highly capable and informed persons. However, farm co-ops still must face (1) the problem of getting individual members to subordinate their own interest to that of the co-op so that some control over the timing and quality of production is effective, and (2) the problem of keeping down the cost of obtaining competent management.

The possibilities of gaining bargaining power through Government aid in establishing market orders or production control appears limited since also some method of supply control is essential. Any effective method must be policeable and meet with both farmer and general public approval. Such approval does not appear likely for any production control method that is really effective.

SUMMARY

Over the next 10 to 20 years farmers are not likely to lose much, if any, management control over the production processes carried out on their farms. Instead of farm operators tending to become more like hired men with less management skill required, the successful commercial farmers will have to constantly increase their management ability. The number of decisions may or may not increase by the scope and complexity will undoubtedly be greater.

The successful farm producers will be those who tend to be most successful at coordinating the quantity and quality of their farm production with the production of the agri-business non-farm firms. In other words, successful farming will come from doing the best job of keeping a balance in producing what the market wants and keeping down production costs. However, this has been an important element in successful farming for a long time. The only new aspect is that coordination becomes increasingly important as specialization increases.

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